Integrated Public Alert and Warning System's

(IPAWS)

Geo-Targeted Alerting System

(GTAS)

Pilot Project Risk Mitigation Plan

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NOAA/OAR/ESRL
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Information Systems Branch

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Contents

Purpose

This document is written to identify, categorize, prioritize, and develop risk mitigation strategies associated with the development and operations of the Integrated Public Alert and Warning System's (IPAWS) Geo-Targeted Alerting System (GTAS) pilot project. This is a living document that will evolve as unforeseen risks are identified and risks have been properly mitigated.

Introduction

GTAS is sponsored by the Department of Homeland Security (DHS) and is a joint development effort between the National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory (ESRL) Global Systems Division (GSD), NOAA's Air Resource Laboratory (ARL), and the National Ocean Service's (NOS) Office of Response and Restoration (ORR). GTAS is a rapid development and deployment effort that integrates the latest research efforts in dispersion and high resolution weather models into a network enabled shared situational awareness display system. GTAS will improve communication and coordination between local Emergency Operations Centers (EOC) emergency managers and National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) Weather Forecast Office (WFO) meteorologists during severe weather, natural disasters, toxic spills, and terrorist attacks. GTAS will do this by providing all users the ability to:

> ➢ Run and view dispersion of toxic plumes.
> ➢ View hazardous weather information.
> ➢ Coordinate and collaborate between agencies.
> ➢ Assess societal impacts due to toxic chemical releases and severe weather conditions.
> ➢ Disseminate societal impact information.

GSD and DHS have identified 5 potential pilot sites for demonstrating GTAS capabilities.

> ➢ Dallas/Fort Worth
> ➢ Seattle
> ➢ Kansas City
> ➢ New York City
> ➢ Washington D.C.

The sites were chosen based partly on the potential risk of severe weather, or terrorist attack. GTAS will be comprised of many client systems communicating through the internet to a server (see figure 1). The GTAS server is responsible for providing access to:

> ➢ Real-time weather observations and forecasts.
> ➢ Dispersion model activation.
> ➢ Dispersion model output.
> ➢ Collaboration for shared situational awareness.

GTAS will leverage the existing NWS network infrastructure and weather display systems to provide the GTAS server with the real-time weather display capabilities. This provides a pathway to national deployment if the GTAS pilot project is a success. GTAS will also leverage existing hardware and communications capabilities at each of the client sites to host the GTAS client application.
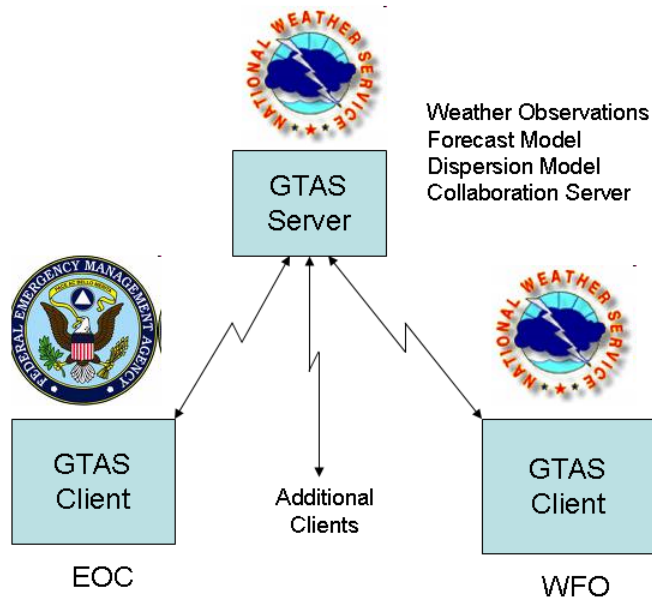
Figure 1   Basic System Architecture

IPAWS GTAS Pilot Project Objectives

The GTAS pilot project objectives are to:

- ➢ Develop a simple to use client application that allows interagency coordination and collaboration (local EOC and local WFO) during events that can have a negative impact on society.
- ➢ Improve the accuracy of the forecasted threat by providing higher resolution meteorological forecast data more frequently.
- ➢ Ability to display toxic plume dispersion data.
- ➢ Determine how state and local governments can use high resolution weather and toxic plume model information for emergency preparedness.
- ➢ Send warning area latitudes and longitudes in Common Alerting Protocol (CAP) messages.
- ➢ Allow for a cost effective pathway for operational deployment in NWS systems refresh by:
  - ○ Leveraging the NWS infrastructure for meteorological data delivery and display.
  - ○ Leveraging client sites hardware for running the GTAS client at the local EOC and local WFO.
  - ○ Leveraging client sites internet access for GTAS client communications at the local EOC and local WFO.

- o Leveraging of current emergency response staff at both the local EOC and local WFO.
- ➢ Develop requirements for the NWS infrastructure refresh to meet GTAS needs.

Risks Identified

Develop a Simple to Use Client Application that Allows Interagency Coordination and Collaboration During Events that can have a Negative Impact on Society.

1. Application is modeled after WFO operational forecaster systems so not a risk for the WFO user.
2. Application interface can be easily tailored for non-meteorologist use but might still not be easy to use during emergency operations.
3. Developers not fully aware of user requirements.

Improve the Accuracy of the Forecasted Threat by Providing Higher Resolution Meteorological Forecast Data More Frequently.

1. High Performance Computing system goes down or unavailable to make WRF-NMM model runs.
2. High Performance Computing resources insufficient to make all forecast runs for all sites.
3. Bandwidth at NWS regional headquarters not large enough to accept all WRF-NMM model data.
4. Communications fail during send of WRF-NMM model data to the GTAS servers.

Display Toxic Plume Dispersion Model Output within Two Minutes of a User Running the Dispersion Model.

1. GTAS server goes down or is over utilized to run the dispersion model in a timely fashion.
2. WRF-NMM data not available on the GTAS server when dispersion model is run.
3. Internet communications goes down or is over utilized during the request to run and display the dispersion model data.
4. Too many applications running on GTAS client to handle timely display of dispersion model data.

Determine How State and Local Governments Can Use High Resolution Weather and Toxic Plume Model Information for Emergency Preparedness.

1. Five pilot sites may not be enough sites to establish requirements for all State and Local governments.
2. Staff changes could realign focus at a state or local EOC.
3. Failure of the system during an emergency.
4. Participants unable to participate during an actual or staged emergency.

Send Warning Area Latitudes and longitudes in Common Alerting Protocol (CAP) messages.

1. User unable to create CAP messages from warning boxes on GTAS client interface.

Allow for a Cost Effective Pathway for Operational Deployment in NWS Systems Refresh.

1. Client sites (local EOC, local WFO, and state EOC) may not have the hardware to support GTAS client application.
2. Client sites may not have the internet bandwidth to support GTAS client communications.
3. Sites may not allow internet communications for security reasons.
4. Site participation may be limited or non-existent due to staffing issues.
5. Sites may not want to participate.
6. NWS infrastructure at regional headquarters may not be able to support access to meteorological data sets by the GTAS server.
7. NWS regional headquarters may have limited bandwidth for the support of GTAS communications.
8. GTAS server deliveries delayed to regional headquarters.
9. Regional headquarters slow to install GTAS server.

Develop Requirements for the NWS Infrastructure Refresh to Meet GTAS Needs.

1. GTAS EOC participant is unavailable during information gathering for evaluations.

Risks Categorized